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SYSTEM AND METHOD FOR THE MEASUREMENT OF FULL RELATIVE POSITION AND ORIENTATION OF OBJECTS

Abstract

A system for measuring a position and orientation of an object in flight relative to a reference coordinate system is provided. The system including: three or more illuminating sources, each disposed in a predefined position, the three or more illuminating sources together emitting a plurality of distinct polarized radio frequency signals to provide temporally synchronized, pulsed radio frequency signals that illuminate the object; one or more waveguide cavities disposed on the object for receiving the plurality of distinct polarized radio frequency signals from each of the three or more illuminating sources in flight; and a processor for measuring a time for the plurality of distinct polarized radio frequency signals to propagate from each of the three or more illuminating sources to the one or more waveguide cavities and the level of signal received at the waveguide cavities and to determine a position of the object relative to the three or more illuminating sources based on the measured times and the orientation of the

object relative to the reference coordinate system based on the measure levels of received signals.